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OPINION PIECE

**BIOFUELS, ENERGY AND AGRICULTURE:
Powering Towards or Away From Food Security?**

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**When Food Makes Fuel:
The Promises and Challenges of Biofuels**

By Joachim von Braun

Director General, International Food Policy Research Institute (IFPRI)

World agriculture is at a turning point: energy and climate change are re-defining the global food situation. As demand for affordable energy increases, along with greenhouse gas emissions, bioenergy is increasingly seen as an economically and environmentally sound solution. The growing potential of biofuels appears to create a substantial opportunity for the world's farmers in both industrialized and developing countries.

A modern biofuels industry could also provide developing-country farmers with a use for crop residues and marginal land. Emerging new second-generation technologies can convert cellulose from residues such as stalks and leaves into ethanol or electricity. While a much higher valuation of "residues" may in fact make "residues" history in agriculture, the soil fertility effects of such a change could be adverse. In some cases, degraded or marginal land that cannot support the production of food could be suitable to grow energy crops, giving farmers more options.

Biofuel production can generate additional employment in rural areas. However, the extent to which farmers will be able to realize the benefits of switching to biofuels production depends on many conditions, including access to markets and access to technological innovation. Public-private partnerships could help create opportunities for farmers in low-income countries and increase R&D investment in biofuel technologies.

Despite the significant, positive potential of bioenergy, biofuels also pose challenges, especially for the poor in developing countries. Increased production of energy crops, for example, has the potential to exacerbate socioeconomic inequalities by concentrating benefits in the hands of those who are already well-off. If not well managed, biofuel production can also lead to deforestation, a loss of biodiversity, and excessive use of fertilizers and pesticides, thereby degrading the land and water that poor people depend on. Policymakers must take care to ensure that biofuel production is managed and regulated in a way that is sustainable and avoids these pitfalls.

More importantly, biofuels could increase food prices. According to analyses by the International Food Policy Research Institute (IFPRI), such price increases could range between 5 and 15 percent for various crops, given the current plans for biofuels production. Aggressive growth in biofuels, however, could lead to even greater price increases.

By 2020, prices for grain crops could increase by 20 to 40 percent, over and above other causes for price hikes, including increased demand from the growing and wealthier

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populations of developing countries. Such price increases would pose difficulties for many of the one billion poor people in the world who earn only a dollar a day and typically spend 50 to 70 cents of that on food. However, new technologies that increase efficiency and productivity in crop production and biofuel processing could reduce these price increases.

Higher feedstock prices would benefit energy crop producers. They would, however, adversely affect poor consumers, as well as small farmers who buy more food than they grow. For countries with a limited natural resource base, biofuels could divert land and water away from the production of food and feed.

Critics argue that crop production for biofuels compete with and drive out food production, reducing access to affordable food. But hunger is not simply due to a lack of food availability. The primary cause of hunger is poverty. If increased production of biofuels can raise the incomes of small farmers and rural labourers in developing countries, it may in fact improve food security.

Still, risks for food security remain, particularly if a country's biofuel sector is not well managed and if oil prices are unstable. Destabilizing oil price fluctuations that translate into food price fluctuations may actually be more worrisome than long-term price effects, as the poor have little capacity to adjust in the short run. Opening up trade opportunities for biofuels can dampen price fluctuations. Thus, the effects of biofuel expansion on food security depend heavily on policies related to technology and trade.

Policymakers have recognized that the high demand for energy and the apparent enormous potential of biofuels do not automatically guarantee a positive impact on poor people and developing countries. Creating an industry that helps the neediest people improve their lives and livelihoods will require careful management by both the public and private sectors.

In order to make a difference in the lives of poor people, as both energy producers and consumers, and to make strong environmental and economic contributions, biofuel technology needs further advancement. Investments and policies facilitating agricultural innovation and trade will have to be considered, and a comprehensive policy framework is needed that has three major pillars: science and technology policy, markets and trade policies, and insurance and social protection for the food insecure poor. The latter could include employment and cash transfer programs, and social security systems for the poorest.

To develop a pro-poor biofuels sector that is sustainable, actors at the international, national, and local levels have crucial roles to play. International institutions must help transfer knowledge and technology for developing an efficient and sustainable biofuels industry to poor countries. The international community must also create a level playing field for trade in biofuels. By subsidizing domestic agriculture and biofuels industries, the price of grains and other feedstock increase, distorting the opportunities for biofuel production and trade.

At the national level, policymakers must take steps to create a well-functioning market for biofuels, to promote investment in associated areas like flexible-fuel vehicles and fueling stations, and to regulate land use in line with socioeconomic and environmental goals. They must also provide farmers with research and extension services, credit, infrastructure, and support for innovation.

To satisfy the world's food, feed, and fuel needs, a new and very different Green Revolution is needed now—one that takes into account bioenergy and climate change. With sound technology and trade policies, as well as social protection programs, win-win solutions are possible with biofuels in developing countries. The results would be positive for the food security of the poor, energy security, and economic development.